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The Balanced Scorecard Management System (BSMS) at Wilford Hall Medical Center (WHMC) is a strategic management and measurement system that translates the organization's vision, mission and goals into a comprehensive set of performance measures. The BSMS allows leaders to manage the organization by focusing on the critical issues that define the organization's contributions to the enterprise. The scorecard was built by aligning performance measurements within the four key scorecard perspectives of Learning & Growth, Internal Business Processes, Customer and Financial. Additionally, balance in the scorecard was achieved with the measurements (either quantitative or qualitative), by focusing on both outcome measures and performance drivers. This paper describes the work that went into building the BSMS at the premier Air Force medical enterprise. From a discussion of the conditions that prompted the study to a look at the statement of the problem, the author explores the history and use of the balanced scorecard concept in civilian business, industry and healthcare. From that point the author discusses the BSMS as it applied directly to WHMC, from an early focus on defining the mission, vision and goals of the organization, through development of Mission Essential Tasks to measurements. The final product of the efforts applied was an Intranet-based, database automated, Balanced Scorecard Management System.

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The Balanced Scorecard: A Management System for Wilford Hall Medical Center - the Premier Air Force Medical Enterprise

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Abstract

The Balanced Scorecard Management System (BSMS) at Wilford Hall Medical Center (WHMC) is a strategic management and measurement system that translates the organization's vision, mission and goals into a comprehensive set of performance measures. The BSMS allows leaders to manage the organization by focusing on the critical issues that define the organization's contributions to the enterprise.

The scorecard was built by aligning performance measurements within the four key scorecard perspectives of Learning & Growth, Internal Business Processes, Customer and Financial. Additionally, balance in the scorecard was achieved with the measurements (either quantitative or qualitative), by focusing on both outcome measures and performance drivers.

This paper describes the work that went into building the BSMS at the premier Air Force medical enterprise. From a discussion of the conditions that prompted the study to a look at the statement of the problem, the author explores the history and use of the balanced scorecard concept in civilian business, industry and healthcare. From that point the author discusses the BSMS as it applied directly to WHMC, from an early focus on defining the mission, vision and goals of the organization, through development of Mission Essential Tasks to measurements. The final product of the efforts applied was an Intranet-based, database automated, Balanced Scorecard Management System.

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Introduction

Conditions Which Prompted the Study

Wilford Hall Medical Center (WHMC) is the United States Air Force's premier medical enterprise, a national resource providing medical care to beneficiaries in the south-central United States, as well as specialized care to patients from all over the world. Wilford Hall has four overall missions. The primary mission is military readiness: to train, to plan for contingencies and to prepare to deploy elements to forward areas around the world. Deployments allow the staff to provide healthcare under the challenging conditions of worldwide contingencies and to support the Air Force policy of Global Engagement for wartime operations and Operations Other Than War (OOTW).

From the time of the organization's founding in 1942, the medical center has put the defense of the nation first. During World War II the organization provided medical care to aviation cadets and other military personnel, and military training to newly joined nurses and other professionals.

During the Korean War, the medical center expanded to meet the geometrical increase in trainees and became a treatment point for war casualties flown to San Antonio. By the end of that conflict in 1953, the hospital had seen more than 30,000 air evacuees. More recently, during the Gulf War, more than a thousand active duty WHMC personnel were sent to staff a 1,500

bed contingency hospital in England. Wilford Hall currently has 45 Unit Type Codes formed into 114 readiness teams consisting of nearly 1,600 personnel wartime positions. These military warriors provide their support to the defense of the nation. Table 1 contains a breakdown of the predominant readiness teams. Information for this table is from the Wilford Hall Medical Center Information Summary Handout.

As a second mission, Wilford Hall provides a worldwide referral center and operates a comprehensive community healthcare system for active duty military personnel and other beneficiaries. Their patient care mission includes more than 887,000 outpatient visits and over 2.5 million prescriptions per year. The Wilford Hall Medical Center Executive Information Center, an intranet service describing workload summary data, was the source for Table 2 on fiscal year 1998 productivity.

The medical center provides the entire range of care from allergy services to vascular surgery. They serve as a national center of excellence for a number of programs. The medical center operates the only program in the Department of Defense (DoD) for allogenic bone marrow transplantation and operates the military's only eye bank. Additionally, the medical center operates the Air Force's treatment and evaluation center for the Human Immunodeficiency Virus (HIV). Wilford Hall is also world renown for its obstetrics and gynecology and neonatology programs. Table 3 has a complete list of specialties available. Information for the table was provided from the Wilford Hall Medical Center Provider's Guide to Medical Services.

Table 1

Readiness Teams

Type of Team	Number of Teams	Total Personnel
25-Bed Air Transportable Hospital (ATH)	2	269
125-Bed Hospital Expansion Team	1	214
Critical Care 10-Bed Intensive Care	8	208
250-Bed Aeromedical Staging Facility	1	180
100-Bed Aeromedical Staging Facility	1	86
Critical Care Air Transport Teams	10	30
Mobile Field Surgical Teams	2	10

The third mission of WHMC is as the foremost provider of medical education and training. Although formal training programs at the medical center date to the early days of World War II, postgraduate medical education began with the establishment of the nurse anesthetist training program in 1952. Programs have been added steadily over the years until the medical center today provides training to residents and fellows in over 45 specialties. Wilford Hall provides the Air Force with 65 percent of the physician specialists and 85 percent of the dental specialists. Full spectrums of other training, including the practical phase of training for enlisted medical specialists and an active nurse internship program also occur in the facility. The recent integration efforts of the WHMC graduate medical education (GME) programs with the programs of the U.S. Army's Brooke Army Medical Center (BAMC) and the University of

Table 2

Workload Indicators, Fiscal Year (FY) 1998

Name of Service	Annual Total	Monthly Average
Outpatient Visits	887,531	73,961
Inpatient Visits	36,132	3,011
Radiology Films	142,053	11,383
Laboratory Tests	1,839,820	153,318
Prescriptions	2,634,761	219,563
Admissions	15,473	1,289
Occupied Bed Days	67,707	5,642
Daily Patient Load	***	185
Live Births	2,064	171
Surgeries	5,190	433

Texas Health Science Center (UTHSC) promises to create a robust GME system that will benefit all involved.

Medical education is also provided through the medical center involvement in trauma care for San Antonio. As the only Air Force level-one trauma center, Wilford Hall participates fully in the trauma and emergency medicine care of the San Antonio and 22 south Texas civilian counties. Wilford Hall is responsible for 25 percent of San Antonio's ambulance missions and over 40 percent of the city's penetrating trauma (gunshot and knife wound) cases. This arrangement provides excellent training for wartime situations.

Wilford Hall's fourth mission is clinical investigations.

Table 3

Medical Services

Services		
Allergy/Immunology	Managed Care Outreach	Pediatric Center
Bone Marrow Transplant	Medical Boards & Exams	Pharmacy
Cardiology	Nephrology	Physical Therapy
Cardiothoracic Surgery	Neurology	Plastic Surgery
Dental	Neurosurgery	Psychiatry
Dermatology	Nuclear Medicine	Psychology
Emergency Medicine	Nutritional Medicine	Public Health
Endocrinology	Obstetrics/Gynecology	Pulmonary
Flight Medicine	Occupational Therapy	Rheumatology
Gastroenterology	Ophthalmology	Social Work
General Surgery	Optometry	Surgical Research
Health & Wellness Center	Orthopedics	Surgical Transplants
Hematology/Oncology	Otolaryngology Surgery	Telemedicine
Infection Control	Pastoral Care	Urology
Infectious Diseases	Pathology	Vascular Medicine

This medical research mission supports peacetime and wartime capabilities through laboratory innovations. At any given time, over 800 active research protocols are ongoing in the complete spectrum of care available in the medical center. The research department has delivered numerous contributions over the years. The department developed the concept of aerobic exercise and the high-frequency oscillatory ventilator. Also developed at WHMC

was the extracorporeal membrane oxygenator (ECMO), a heart-lung bypass machine for babies. Additionally, the first natural history study of the Human Immunodeficiency Virus (HIV) was completed here.

Since its inception in 1942, the organizational structure of WHMC has remained relatively stable. Minor name changes and organizational alignments have occurred, but the basic organization known for excellence has continued. However, the world and the practice of military medicine have been continually changing. In 1998, after five years of study, WHMC reorganized itself to align with the non-medical Air Force and the rest of the Air Force Medical Service, and took on an objective wing structure.

While other medical facilities throughout the Air Force became objective medical groups (OMG), WHMC became an objective medical wing (OMW) due to the sheer size of the organization. As the only OMW in the Air Force, WHMC is composed of five groups that are further subdivided into 20 squadrons. Table 4 provides a complete list of the organizations that comprise WHMC. Information for this table was provided from the WHMC Internet home page.

With the Cold War over and Congress freeing up defense authorization monies to other domestic programs, the DoD budget has declined over the last few years. As a result the portion allotted to the Defense Health Program (DHP), the program which oversees all DoD healthcare, has also declined. With a smaller Air Force Medical Service budget, the financial allocation to

Table 4

Groups and Squadrons

Group	Squadron
59th Surgical Operations	59th Surgical Operations
	759th Surgical Operations
	859th Surgical Operations
	959th Surgical Operations
59th Medical Operations	59th Medical Operations
	759th Medical Operations
	859th Medical Operations
	959th Medical Operations
59th Diagnostic & Therapeutic	59th Diagnostic & Therapeutic
	759th Diagnostic & Therapeutic
	859th Diagnostic & Therapeutic
	959th Diagnostic & Therapeutic
59th Aeromedical-Dental	59th Dental
	59th Aerospace Medicine
	59th Readiness
59th Medical Support	59th Medical Support
	759th Medical Support
	59th Logistics
	59th Training
	59th Clinical Investigations

Air Education and Training Command (AETC) and WHMC in turn is less. In fiscal year (FY) 1992, the total funding to WHMC for

care conducted was $167 million. This has continued to decline in subsequent years to $147.6 million in FY 1996, $135.9 million in FY 1997, and $121.1 million in FY 1998. To further compound the growing problem, as of the start of FY 1999, the expected allotment was only $106 million. This $106 million was over $30 million short of what was required to support the four missions WHMC was currently tasked to perform. This shortfall was setting up a situation where WHMC would be unable to accomplish its taskings. Intense negotiations between the Air Force Medical Service (AFMS) Surgeon General (SG) and the DoD resulted in an increase to the WHMC apportionment. This increase allowed WHMC to meet its four missions for another year (59th Medical Wing, Oct 1998).

With the DHP resources ever-decreasing, WHMC leadership had to decide how to more effectively manage the organization into the future. The challenge at hand was to find a way to continue to fully meet the requirements of the four missions while at the same time contending with shrinking resources and the resulting declining capabilities.

Statement of the Problem

Organizations require a vision to provide a view to their future. Linked to that vision is a requirement to understand the mission of the organization. The desire to accomplish the mission(s) is the driver for effective strategy. Yet far too often, strategy is written at the corporate/executive level and little known or followed at the operational level. To drive strategy to the operational level, organizational leadership must

use a management system that aligns the activities of all levels of the organization, and is transparent back to the strategy of the enterprise. Yet, developing the proper management system and then implementing it is anything but easy. Effective development and implementation can be difficult. Executive issues such as power, control, time constraints and a fear of the unknown can all hinder the development process.

Wilford Hall Medical Center lacked a management system to ensure efficient and effective operation. No management system was available for leadership to use to ensure that their four missions were being achieved with the greatest optimization of resources. With nearly 5,000 active duty and civilian personnel employed (Carlton, Fall 97), the sheer size of the enterprise is a limiting factor to harnessing the knowledge and energy of its brilliant people, in a systemic manner, sought by a learning organization.

Additionally, as a healthcare organization, WHMC is held accountable to outside organizations that mandate compliance with certain standards and requirements. These outside pressures come from many levels. The Office of the Assistant Secretary of Defense for Health Affairs (OASD(HA)) exerts control via the TRICARE Operational Performance Statement (TOPS), previously known as the Military Health System (MHS) Performance Report Cards (TOPS, 1998). Both the Air Staff and AETC exert pressure by requiring compliance with the Air Force Mission Essential Task List (AFMETL, 1998) and the AETC Mission Essential Task List (AETCMETL, 1998). Outside the chain of command, but equally as

daunting, are the requirements of the Joint Commission on the Accreditation of Healthcare Organizations (also known as the JCAHO) (JCAHO, 1997, 1998).

The leadership of WHMC often found itself responding in isolation to meet taskings and requirements levied upon them or in response to an impending visit or inspection by some agency or governing body. Many times, requirements did not even directly impact the entire facility, impacting instead only select groups or squadrons within the organization. Not only did responding to these requirements create a chaotic operation, but the different levels of the organization used different methods to ensure compliance and management. The leadership of the wing, groups and squadrons had no uniform, and arguably reliable, method of management in place, approaching management in assorted fashions using literally hundreds of scattered and fragmented measurements to manage. This resulted in little uniformity and dissimilar information making leadership difficult.

A management system was required to ensure that WHMC could operate at peak levels of efficiency and effectiveness. Through a series of briefings, discussions and culling over management literature, the concept of the Balanced Scorecard was introduced to the leadership of the enterprise. The result was a decision to adopt a Balanced Scorecard approach to manage WHMC.

Literature Review

During the course of the research, a thorough review and analysis of journal articles, case studies and textbooks pertaining to the subject of balanced scorecards was conducted by

the author. The author supplemented this data through interviews with individuals who were familiar with the scorecard, participation in scorecard seminars and personal experience while serving as a member of the scorecard-working group.

The literature examples below reveal that to meet the mission and strategy of organizations, those organizations must have a management system built upon a balanced set of performance measurements. Within the business and corporate world, numerous examples abound. Leading companies in every industry have successfully implemented performance-based, measurement-managed, strategic planning systems. These companies realize that the ability to link their performance measurements to strategy puts them in a position to maximize returns and stakeholder value.

As early as 1951, Ralph Cordiner, the Chief Executive Officer (CEO) of General Electric, commissioned a task force to identify performance measures key to the corporation. The categories the task force achieved were timeless and comprehensive. In addition to profitability, the list included market share, productivity, employee attitudes, public responsibility and a balance between long and short-term goals.

Cordiner realized, as many CEOs and board members do today, that grafting new performance measures onto an old accounting-driven performance system or making slight adjustments in existing incentives accomplishes little. Additionally, many executives and managers today share the concern that income-based financial figures are better at measuring the consequences of yesterday's decisions than they are at indicating tomorrow's

performance (Eccles, 1991).

During the 1980s, many executives saw their companies' strong financial position deteriorate because of declines in customer satisfaction and quality, or because of global competitors cutting into their market share. Leading manufacturers and service providers alike had come to see quality and customer satisfaction as a strategic weapon in their competitive battles. Major outgrowths of these initiatives led to the growth of the Total Quality Movement (TQM) and related programs such as the Malcolm Baldrige National Quality Award (Eccles, 1991).

In 1992, two Harvard Business School professors, Robert S. Kaplan and David P. Norton espoused that traditional financial measures worked well for the industrial era, but financial figures alone were out of step with the skills and competencies companies were trying to master. Instead, they developed a performance measurement system that they labeled the "balanced scorecard." It not only included financial measures, which tell the results of actions already taken, but customer satisfaction, internal processes and an organizations innovation and improvement; measurement drivers of future performance (Kaplan, Norton, 1992). While many other advocates have sounded the call for improvement in performance measurement arena, Kaplan and Norton have arguably been the most vocal.

Numerous companies have adopted the principles espoused in the balanced scorecard. One example is Rockwater, a global engineering and construction company and a worldwide leader in underwater engineering and construction. Competition among like

businesses had become intense in the 1980s and many small companies had left the industry. Additionally, many leading oil companies wanted to develop long-term partnerships with their suppliers rather than choose suppliers based solely on low-price competition. Norman Chambers, hired as the CEO in 1989, knew some changes were required to stay in business. Together with his senior management team, they developed a vision, a strategy to implement the vision, and measures that could be tracked to ensure performance.

The balanced scorecard helped Rockwater's management to emphasize a process view of operations, motivate its employees and incorporate client feedback into its operations. It also helped develop a consensus on the value of creating partnerships. The scorecard was an invaluable tool that helped his company ultimately achieve its mission to be the best in the industry (Kaplan, Norton, 1993).

Another example is Apple Computers. They developed a balanced scorecard to focus senior management on a strategy that would expand discussions beyond gross margins, return on equity and market share. To do this, a small steering committee chose to concentrate on measurement categories (objectives) within each of the four perspectives advocated by Kaplan and Norton, accompanied by multiple measurements within each category.

Within the financial perspective their objective was shareholder value. Market share and customer satisfaction were the focus for the customer perspective. Internal business processes were addressed by focusing on core competencies.

Within the innovation and improvement perspective (later renamed learning and growth) employee attitudes were targeted.

Their performance objectives helped Apple's senior managers to focus their strategy. They view the balanced scorecard as a planning and management device, instead of as a control device. In other words, Apple realized the value of the scorecard was to aim for the horizon and the long-term view, not simply to drive operating changes in the short term (Kaplan, 1993).

The list of companies using the scorecard is ever growing. Advanced Micro Devices (AMD), a semiconductor company, executed a quick and easy transition to a balanced scorecard. They view their scorecard as a systematic repository for strategic information that facilitates long-term trend analysis for planning and performance evaluation (Kaplan, 1993). Other big names like Whirlpool, Nova Scotia Power, General Motors, Federal Express, Eastman Kodak and others have all acknowledged the value of an organization driven by a balance of performance measures (Hubbell, 1998).

In 1996, with the publishing of their book, Kaplan & Norton refined their input into the balanced scorecard concept. To start, they modified the names of the four perspectives, now known as Learning and Growth, Internal Business Practices, Customer and lastly Financial, each with its own focus.

The Learning and Growth perspective focuses on, "to achieve our vision, how will we sustain our ability to change and improve?" Within the Learning and Growth perspective, the organization provides information system capabilities and

employee capabilities. Additionally they ensure personnel are motivated, empowered and aligned within the organization.

The Internal Business Processes perspective asks, "to satisfy our stakeholders and customers, at what business processes must we excel?" With their needs already cared for, the employees are then able to identify the market, create the product/service offering, deliver the product/service and fully service the customer. That is, they are able to concentrate on their Internal Business Processes.

In the Customer perspective, the question becomes, "to achieve our vision, how should we appear to our customers?" Properly meeting the customer's needs develops market share as customers are acquired, retained, and continually satisfied. Relationships are forged between the organization and the customers based upon product/service attributes, and the value propositions of time, quality and price.

Lastly, the Financial perspective asks the question "to succeed financially, how should we appear to our stakeholders?" Satisfied customers create throughput. This throughput contributes to an organization's revenue growth and mix, cost reduction and productivity improvement, and a refined asset utilization and investment strategy.

Each perspective (consisting of objectives, measures, targets and initiatives to assure success) is uniquely tied into the organization's strategy and mission. The focus is on the performance at the strategic business unit (SBU), cascading up through the division and into the corporate levels. The SBU is

the level of the organization responsible to the division level and responsible for the direct productivity of the enterprise. The division is the level of the organization responsible to the corporate level and responsible for the SBUs below it. The corporate level of the enterprise is responsible to set direction of the enterprise via the enterprise's vision, mission and goals (Kaplan, Norton, 1996).

While the balanced scorecard concept originated in the business world, the concept has begun to infiltrate the healthcare field with an ever-expanding number of hospitals and healthcare systems adopting the concept. Hospital administrators see the balanced scorecard as a logical device whereby the most salient factors that contribute to hospital quality may be organized and evaluated. The following examples in the literature show that the turbulent world of healthcare also seeks a management system that is balanced in its use of performance measures.

Promina Health System of Atlanta, Georgia is one example. Promina is made up of over 2,500 physicians, nine hospitals, three medical centers and two psychiatric centers. The system was created in 1994 by Atlanta's leading community-based physicians and hospitals to preserve high-quality efficient healthcare. As Georgia's largest not-for-profit (NFP) healthcare system, they are committed to a philosophy that helping people maintain good health is as essential as the treatment of illness (Promina, 1998). Promina realized the need to support a balanced concept of management. Their decision to develop and implement a

balanced scorecard approach was based upon several factors. They realized the need to measure performance against strategy. They needed alignment and linkage of organizational goals and a framework for assessing strategic priorities. Additionally, they needed a balanced report that would measure performance against standards and identify best practices (Black, Britian, Gordon, Karr, Sikes, 1998).

Another example is CentraState Healthcare System of Freehold, New Jersey. Originally known as Freehold Area Hospital when they opened in 1971, they are now a full service healthcare system. Their mission is to provide the highest quality healthcare possible in their service area, and to have the healthiest population in New Jersey, according to selected health status indicators (CentraState, 1998). They developed a balanced scorecard with the perspectives of financial status, customers, internal management processes and innovation & growth. Their perspectives were tied into their mission and vision statements. With a prospective view, they asked "What is the vision for the future?" and, "If the vision succeeds, how will we differ?" Critical success factors (a.k.a. goals) are listed for each perspective which present in general terms, the steps to be taken to tie into their strategy. Once goals are set the critical performance measurements are outlined, with target dates and action offices responsible to champion that issue (CentraState, 1997).

The Henry Ford Health System (HFHS) started as a single hospital in Detroit in 1915 by auto pioneer Henry Ford. Today,

this system is known nationally for its educational programs, quality research and commitment to patient care. Their system consists of over 28 medical centers, six hospitals, numerous ambulatory care centers and over 1,800 physicians working to bring high quality healthcare to 2.5 million patients throughout southeast Michigan (Henry Ford, 1998).

As part of their consolidation of performance indicators, senior management executives knew they needed to be able to maintain the ability to examine several categories critical to the success of their organization, while continuing to focus on the global information and not the details of financial reports. The scorecard developed by HFHS measures the health systems progress in the four main areas of customer satisfaction, growth, low cost provision of services and system integration. Additionally, HFHS realized the danger in senior management tracking too many indicators and limited themselves to 15 factors at the board level (Health Care Advisory Board, Aug 1997).

Another example is Advocate Health Care. Advocate Health Care, based in Oak Brook, Illinois, is the largest fully integrated healthcare delivery system in metropolitan Chicago and is recognized as one of the top 10 systems in the country. Tracing its beginnings back 100 years, Advocate has eight hospitals, over 3,000 beds and among its more than 200 care sites, also has the state's largest privately held full service home healthcare company. More than 21,000 people are employed with Advocate, making it one of Chicago's largest employers. More than 4,000 physicians are affiliated with the system.

This author had the pleasure to talk with Robert C. Lloyd, Ph.D., the Director of System Quality on a couple of occasions (R. C. Lloyd, personal communication, November 19, 24, 30, 1998), concerning their scorecard. Additionally he was helpful in sending some literature describing their method of management.

Advocate employs a management system that uses modifications to suit their specific requirements. Their system is referred to as the Dashboard of Strategic Indicators (Advocate, 1998). Their dashboard brings together, in a single management report, many of the seemingly disparate elements of their organization's strategic agenda. They have focused their dashboard down to eight major categories of measurements, which helps to reduce information overload, and focus on the indicators that are vital to their operation.

At the corporate level the dashboard puts their strategy and vision at the center of the organization's efforts to manage. Senior managers are able to consider all the important measures together. This lets them see whether improvement in one area may be achieved at the expense of another, at the same time preventing suboptimization. Their dashboard is based on an understanding between the functions of the health system, not the performance of an individual function or unit (Advocate, 1999).

Still another example is the Department of Veterans Affairs (DVA). I had opportunity to meet and discuss the scorecard with Kurt C. Gundacker, Program Coordinator of Management/Total Quality Improvement (K. C. Gundacker, personal communication, January 29, 1999). He is located at the Minneapolis Regional

Medical Education Center, and he was in San Antonio to give a presentation on their version of the balanced scorecard.

Much of what Gundacker discussed was classic Kaplan and Norton philosophy, which we have incorporated into the development of the WHMC scorecard. He discussed the need to change from a management control system to a strategic management system. He emphasized that the prerequisites for a strategic management system are clarity and consensus on goals and objectives, a strong communication commitment, crossfunctional integration and an empowered and educated workforce. He emphasized that the most important requirement is to have top management passionate commitment and participation. Without top management's involvement, it's best to abandon current efforts or eliminate any attempt to develop a scorecard (Gundacker, 1999).

The Health Care Advisory Board (HCAB) is a membership-based for-profit research firm serving over 1,500 of America's leading hospitals and health systems. In an August 1997 brief, the HCAB contacted seven health systems throughout the United States (ranging in size from five to fifteen hospitals and 1,500 to 3,000 beds per system). These health systems indicated that before they started using a balanced scorecard they struggled to identify and collect data necessary to outline the performance of a system. The majority of the health systems contacted are utilizing the balanced scorecard in order to capture their systems performance for strategic planning initiatives.

These health systems overwhelmingly agreed that the balanced scorecard minimizes information overload by limiting the number

of measures used while forcing managers to focus upon a handful of measures that are most critical (Health Care Advisory Board, Aug 1997). Many companies, in addition to those surveyed, see the balanced scorecard as the cornerstone of a new strategic management system, one that contributes to long-term objectives.

In a later fact brief, the HCAB surveyed a 350-bed NFP medical center, a 200-bed NFP pediatric hospital, an 800-bed NFP small Midwest City hospital and a NFP multi-hospital system. The objective of the HCAB in this instance was to gather information concerning background and development, structure and effectiveness of balanced scorecard models. Sources at all hospitals surveyed stated that scorecards were created to provide a greater level of standardization and rigor to performance measurements and to encourage hospital employees to look and think beyond financial matters in the analysis of quality. (Health Care Advisory Board, Dec 1997).

Purpose

Wilford Hall Medical Center lacked a management system, to ensure efficient and effective operation of its enterprise. No focused tool was available for leadership to use to ensure that the strategy was achieved or that the missions were being met with the greatest optimization of resources. Yet new strategies and competitive realities demanded a management system.

The purpose of this study was to develop a corporate level Balanced Scorecard Management System (BSMS). That was achieved by working with the wing staff and assorted individuals from the medical groups and squadrons. The BSMS builds heavily upon the

balanced scorecard concepts, promulgated by Robert Kaplan and David Norton. The balanced scorecard concept provided a framework to translate strategy into operational terms, placing strategy, not control at the center of its purpose, with an emphasis on measurements.

Methods and Procedures

Research Method Chosen

The research was conducted and reported using the qualitative methods of ethnography and participant/group observation. The ethnographic method included a strong emphasis on exploring the nature of particular social phenomena, working primarily with unstructured data, investigation of a small number of cases, and analysis that involved explicit interpretation of the meanings and functions of human actions. These meanings and functions take the form of qualitative descriptions and explanations (Denzin, Lincoln 1994).

The group interactions consisted of information derived from groups of team members based upon their experiences, opinions, feelings and knowledge. Additionally, erudition (extensive knowledge acquired chiefly from books and written sources) yielded excerpts and passages from a vast array of literature sources.

Subjects, Objects, Events Defined

While the purpose of this study was to build a corporate level balanced scorecard, the possibility existed from the onset that in time the medical groups and squadrons would also have scorecards. In Kaplan and Norton's model, the corporate level is

the structural nomenclature within the scorecard representing the top level of the enterprise, responsible to set direction of the enterprise via the enterprise's vision, mission and goals. With WHMC this was achieved via the wing level, led by the medical center commander. The division is the structural nomenclature within the scorecard representing the level of the organization responsible to the corporate level and responsible for the level directly below it. In the case of WHMC, this level was equal to the five medical groups each led by a group commander. The SBUs represent the level of the organization responsible to the division level and responsible for the direct productivity of the enterprise. The SBU concept is achieved through the medical squadrons led by squadron commanders.

Following the Kaplan & Norton model for the balanced scorecard, the scorecard would consist of the four perspectives: Financial, Customer, Internal Business Process and Learning and Growth. Within each of the four perspectives, key measurements would be assigned which best reflected those issues that were key to a successful operation. Aligned with each measurement would be targets as levels of performance to strive towards and standards that would outline acceptable ranges of performance.

Data Requirements

Data requirements (measurements) were collected from two areas. The first area was internal to the facility, used within internal quality improvement initiatives. Secondly, data came from external sources such as the OASD(HA), Air Staff, the MAJCOM and the JCAHO.

Validity and Reliability

The validity and reliability of the data was limited by the analysis judgement of the researcher. Literature sources, case studies, and subject matter expert interviews were selected from generally accepted sources of research in order to enhance the validity and reliability factor.

Criteria and Evaluation Schemes

Issue analysis was used to identify goals and measurements that support the corporate strategy, an outgrowth of the enterprise's vision, mission and strategy. Additionally, the goals and measurements were evaluated based upon their value in meeting the requirements of the external agencies to which WHMC is responsible. These were assembled via group data-gathering sessions, and selected based upon determination of importance and the need to measure because of external agency requirements.

Time Frame and Approach

The time frame consisted of approximately six months of development. This time was loosely categorized into five general areas, labeled as:

1) Validation of Wing Vision, Mission and Goals.

2) Development of Mission Essential Tasks.

3) Development and Distribution of Measurements.

4) Creation of the Balanced Scorecard Template/Views.

5) Intranet-Based Balanced Scorecard Management System.

The key players consisted of a design team (working group), the corporate executives (board of directors), division executives (group commanders), and the strategic business unit executives

(squadron commanders). Additional players from respective organizations within WHMC assisted their groups and squadrons as required. The time frame allocated was sufficient to carry out the management project in a logical and efficient manner.

Ethical Considerations

Ethical considerations were adhered to by disclosing my role as a graduate student researcher during interviews and in all settings. The identities of individuals participating in the project were generally not disclosed. Additionally verbal remarks, written communications and individual actions were not misrepresented. Finally, protected intellectual property and proprietary information collected during the study were not compromised.

The Results

The early part of the process consisted of educating the leadership of the enterprise about the concept of the balanced scorecard. This was accomplished through briefings, discussions and literature reviews. From that point the work began on building and refining critical foundational tenets upon which the scorecard would be built.

Refinement of Wing Vision, Mission and Goals

The first step in the process, after the briefings and early education of the leadership, was to refine the vision of WHMC. Griffith states that a vision should be "broader in scope, more emotionally and morally based and more difficult to achieve than the mission." It should "make clear what the organization hopes to achieve, what constraints it recognizes and how it does

business, expressing values, intentions, philosophy and organizational self-image" (Griffith, 1995).

As the design team worked through the process, the vision narrative grew. The existing vision had been a six-word phrase. The design team expanded upon that phrase and more fully described what the leadership believed the vision entailed. The Mission Support Plan (MSP) was helpful in working through the aspects of what our vision was about and lent material to the changes made (Wilford Hall Medical Center, 1997). The final vision statement is listed in Table 5.

The mission was refined in a similar process as the vision. Versions of the mission narrative were worked until a final version was achieved. Griffith defines a mission as, "statements that identify in broad terms the purposes for which the organization exists, specifies the community served and the services provided"(Griffith, 1995). The mission was seen as the foundation of all organizational planning, expressing what the organization was committed to doing. The final mission statement for WHMC is listed in Table 6.

Goals were refined through various methods similar to the vision and mission refinement. Understanding the mission allowed for the activities of WHMC to be stratified into four distinct components. These four components, previously understood as the four wing missions, were renamed goals and their narratives refined to align with current activities. The current goals are viewable in Table 7.

Table 5

Wing Vision

Vision: The "Go To" 911 Healthcare Team
Our vision embodies prominence as a national medical readiness asset, capable of quick response wherever needed--locally, nationally, and globally. This capability is built upon a healthcare system that partners with other civilian and federal healthcare centers in the greater San Antonio marketplace.

Table 6

Wing Mission

Mission:
To provide global medical readiness capability and a comprehensive peacetime healthcare benefit, supported by education, training and research platforms.

Development Of Mission Essential Tasks

The development of the Mission Essential Tasks (METs) was perhaps one of the most difficult areas in building the BSMS. Part of the difficulty was that the introduction of this new concept of METs occurred just two months into our design of the BSMS. Early education consisted of understanding this new Air Force requirement to link tasks accomplished at a wing level to objectives of the major command above it, which link to Air Force objectives and ultimately to the DoD. The METs forced WHMC to focus on those mission essential tasks considered critical to supporting the Air Force goals.

Table 7

Wing Goals

Goal 1:Readiness Provide responsive, sustainable and survivable healthcare services capable of supporting national and theater strategic requirements and sustaining the forces during global contingencies.
Goal 2: Healthy Communities Develop and operate an accessible, comprehensive and cost effective healthcare system focused on building and sustaining healthy communities to support mission requirements and readiness.
Goal 3: Education & Training Train and educate military (active duty and Mirror Force) and civilian personnel using requirements driven, quality healthcare programs to meet and sustain readiness and build healthy communities.
Goal 4: Research Conduct research using requirements driven, high quality protocols to meet and sustain readiness and build healthy communities.

The Air Force mandated that wing level METs be developed and submitted to major commands by January of 1999. Numerous documents were followed to ensure proper alignment with WHMC's chain of command. These documents included the AF Doctrine Document 1-1, AF Strategic Plan Volume 2, and the AFMS and AETC Performance Plans. Figure 1 shows the task list linkage to a higher level of command, and Figure 2 shows the MET List Development overview. Both figures are provided via the 59th

Medical Wing Performance Plan, 1999.

As the only AF medical wing, this new METL requirement took considerable time and energy to develop, placing the BSMS on the proverbial "back burner." The resulting document, The 59th Medical Wing Performance Plan: Mission Essential Task List, forced the design team to relook at the connection between the goals of the organization and the measurements used to monitor and manage those goals. After much work, the METs replaced our original component of objectives as the linkage between goals and measurements. Table 8 lists the METs for WHMC.

Development and Distribution of Measurements

The third phase of the project after the METs was that involving measurements. Initial rounds of discussion focused on educating about measurements. Issues such as quantitative versus qualitative measures were taught. While measurements may be qualitative in nature, quantitative measurements are preferred. The word qualitative implies an emphasis on processes and meanings that are not rigorously examined or measured (if measured at all) in terms of quantity, amount, intensity or frequency. Qualitative researchers stress the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, and the situational constraints that shape inquiry. Such researchers emphasize the value-laden nature of inquiry. They seek answers to questions that stress how social experience is created and given meaning. In contrast, quantitative studies emphasize the measurement and analysis of causal relationships between variables, not

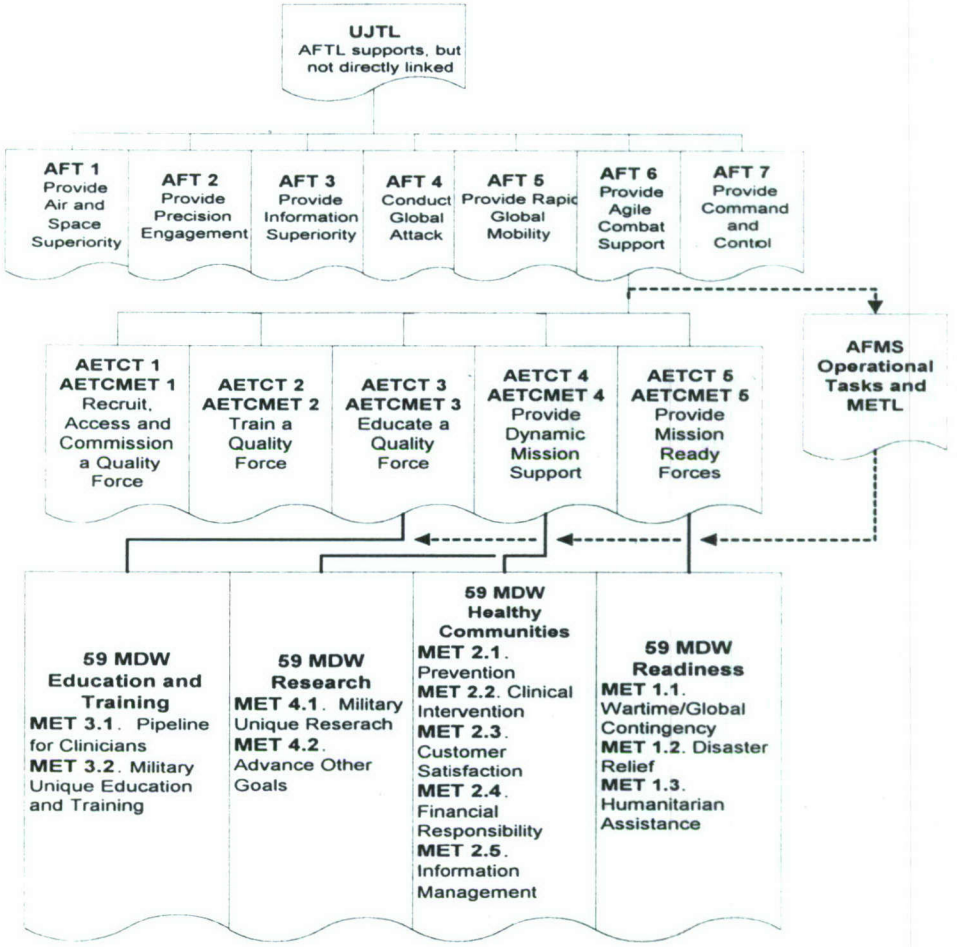

Figure 1. Task List Linkage

processes. Inquiry is purported to be within a value-free framework (Denzin, 1994).

Equally important was the learning and educating about performance drivers versus outcome measures. Performance drivers are prospective measurements (a.k.a. lead indicators) that serve as early indicators of future success. Outcome measures are retrospective measurements (a.k.a. lag indicators) that serve to show results of actions previously accomplished.

Terms like standards and targets were also introduced.

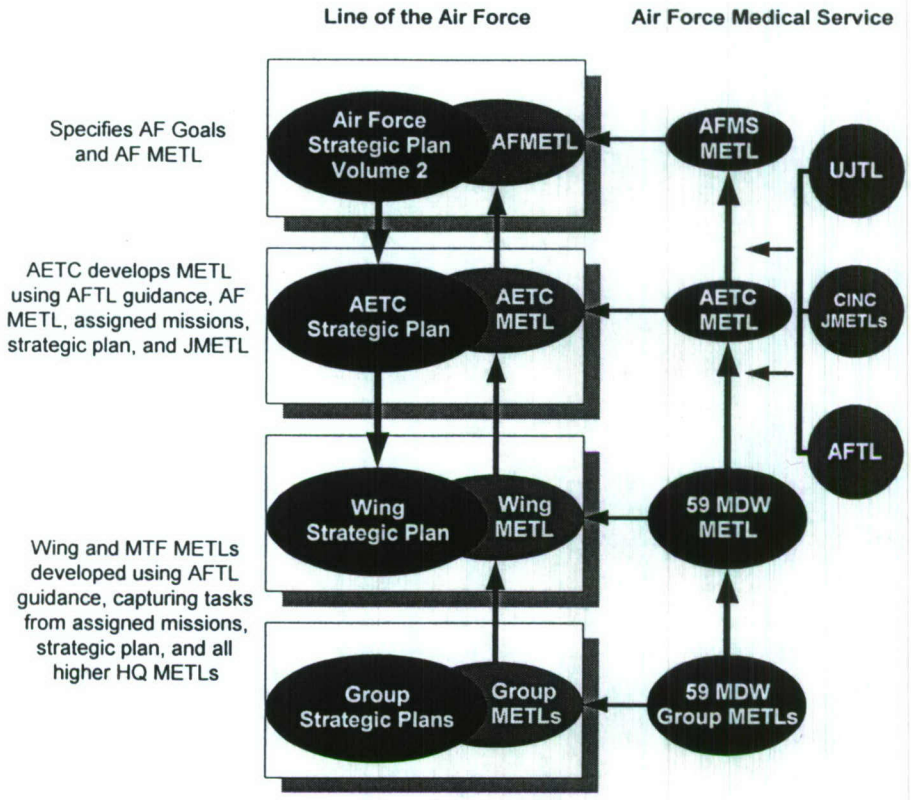

Figure 2. Mission Essential Task List (METL) Development Overview

Standards are the acceptable or normal range to operate within. These are defined by the organizational entity, using historical or externally driven guidance. Targets, on the other hand, are the level to try to exceed. These targets are also defined by the organizational entity using historical or externally driven guidance.

Early efforts were aimed at analyzing the measurements already in existence throughout the facility. These included measurements tracked internally for the sole use of WHMC leadership in decision-making and those measurements required by sources external to the enterprise. Sources of external measurements included those from the OASD(HA) via the TRICARE

Table 8

Mission Essential Tasks (MET)

MET	Title	Narrative
1.1	Wartime/Global Contingency	Meet Headquarters USAF and theater commander employed forces medical support taskings within directed timelines.
1.2	Disaster Relief	Provide healthcare services to support global disaster relief requirements.
1.3	Humanitarian Assistance	Provide healthcare services to support global humanitarian assistance requirements.
2.1	Prevention	Provide comprehensive, cost-effective and sustaining preventive healthcare.
2.2	Clinical Intervention	Provide comprehensive, cost-effective and sustaining tertiary healthcare.
2.3	Customer Satisfaction	Improve access to providers and resources to improve overall satisfaction with clinic visits and within the workplace.
2.4	Financial Responsibility	Develop and maintain fiscally sustainable and integratable services to better manage scarce enterprise resources.
2.5	Information Management	Manage information as a strategic asset to improve leadership, clinical and support staff decision-making processes that support mission requirements.
3.1	Pipeline for Clinicians	Sustain vital Graduate Medical Education and continuing education through partnering with both DoD and non-DoD communities.

Table 8 (Continued)

Mission Essential Tasks (MET)

3.2	Military Unique Education and Training	Develop increased military unique competency levels through greater emphasis on education, training and development program initiatives to support mission requirements.
4.1	Military Unique Research	Improve readiness capabilities and sustaining healthy communities through progressive preventive and tertiary research.
4.2	Advance Other Goals	Conduct research focused on goals 1, 2, and 3 to support and enhance mission requirements and capabilities.

Operational Performance Statement (TOPS, 1998) and the JCAHO (JCAHO, 1997, 1998). These already existing measurements were brought together for use in the scorecard. Additionally, new measurements were created in areas where specific measurements had not existed before, specifically in the areas of finance.

Creation of a specific measurement involved the development of standards and targets for the measurements. The standards established operating parameters and the targets created levels of performance to strive towards in continual improvement. Figure 3 shows a model tying together the wing vision through goals to the targets. The figure is provided via the 59th Medical Wing Performance Plan, 1999. The work then involved segregating each of the measurements into each of the perspectives of the scorecard.

Once loaded under a specific perspective the determination was made as to whether a measurement was prospective in nature, therefore labeled as an outcome driver, or retrospective in nature, labeled as an outcome measurement. Literally weeks of work went into collecting, assessing, aligning and sorting measurements into the applicable components of the scorecard, accomplished through many design team meetings and numerous interviews with key players.

Creation of the Balanced Scorecard Template/Views

The fourth phase of the development was to take all the data accumulated thus far in the process and mold it into hard copy documents. It had been agreed upon earlier in the process that all the energy expended in developing the wing scorecard needed to be packaged in such a way as to allow it to be replicated by others. It was these formats and infrastructure of the scorecard which the groups and squadrons of WHMC would use in developing their own scorecards at some later point. The resulting scorecard consisted of a number of views. These views allowed for the capturing of the information in a number of forms. The views are all available as appendices later, and are best understood in the discussion portion of this paper.

Intranet-Based Balanced Scorecard Management System

The final portion of the building of the scorecard and the creation of a management system (the BSMS) consisted of five subcomponents. The first was the placement of the data on the WHMC Intranet. Placement of the scorecard on the Intranet

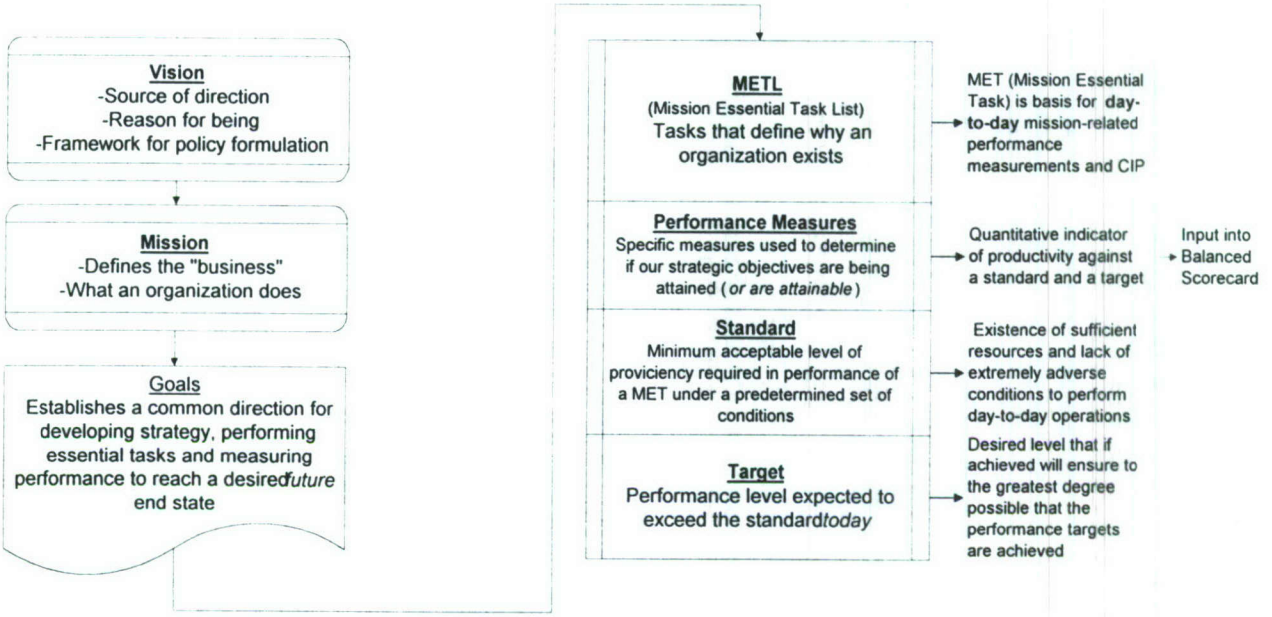

Figure 3. Relationship of Vision through Target

allowed for the automation of the balanced scorecard and the linking capability inherent in Intranet use. See the discussion portion of this paper for details on the linking capabilities.

The second component consisted of medical group (division level) scorecard creation. The groups were educated on their responsibility to develop scorecards. Tools and requirements were outlined. Additionally, the corporate template was shown as a useful template to be replicated.

A third component consisted of the requirement to create a method whereby selected users could update information in the BSMS and see that data update automatically to BSMS views on the Intranet. Working closely with the Information Systems personnel who operate the Intranet, specific requirements were submitted via an AF Form 3215, C4 Systems Requirement Document. The

Information Systems personnel were tasked to develop an appropriate technical solution.

Tied closely to the updating mechanism, is the fourth component to make the BSMS site accessible (read only) to all personnel within WHMC, with a starting link from the main Intranet page. Additionally, the BSMS site needed to be accessible for "write" capability to BSMS Managers to update data on a recurring basis. The BSMS Managers would have the responsibility to act as the organization's point of contact for all actions involving the BSMS.

A final component that is required to place the BSMS into operation is the implementation of the system. This will consist of using the system as a means whereby direct management of the organization is occurring as a result of the data collected and studied. Use of the system will encompass the recording of both the process and the outcomes/decisions made from the use of the system. The Color Coded Scorecard (described in detail later) will be the tool whereby organizational components will keep their chain of command apprised of status. A proposed schedule of status briefings would have each group commander brief the wing commander quarterly on the status of their groups.

Due to the turn-in time constraints of this project, some issues were still ongoing at project turn-in time. Most notable is continuing work of the medical groups to develop their scorecards and the continuing efforts of the Information Systems personnel to develop an acceptable technical solution.

Discussion

As demonstrated by the results, a scorecard can be created for a military medical center. In addition to creating the structure of a scorecard, as we progressed through development, we came to realize that the capabilities of the Intranet would allow us to better use and manage all the possibilities the scorecard had to offer. Because of this rationale, the decision was made to move the entire scorecard to the Intranet.

What follows is a detailed breakout of the scorecard, to include all of its support pages and views. The author will attempt to lead the reader on a journey through the scorecard's specific pages as they appear and would be available to one accessing the scorecard on the Intranet. It is impractical to try to include a forum whereby the reader of this project could fully appreciate the versatility and ease of use of the Intranet-based scorecard. In that absence, a suitable substitute is offered via hard copy printouts of the exact pages available on the Intranet. These pages are included as appendices. It is hoped that by the end of this discussion the reader will be familiar with the layout of the scorecard as used within Wilford Hall Medical Center and its particular use as the management system of choice.

Balanced Scorecard Management System Homepage

The introductory page to the scorecard (appendix B) is accessible via a link from the Wilford Hall Intranet homepage or by typing in the Internet Protocol (IP) address. This page has four components entitled, 1) What Is the Scorecard, 2) Additional

Information, 3) Tools, and 4) Begin the Journey.

The first section, "What Is the Scorecard", is a quick definition of the scorecard, with a simplified analysis of how the perspectives link together in a cause and effect relationship. The second section, "Additional Information" gives links to two additional pages. The first, entitled "Background and Definitions" (Appendix C) gives some detailed history on the scorecard as well as defines some commonly used words and phrases. The second page entitled "Wing Vision, Mission, Goals, Mission Essential Tasks" (Appendix D) shows in chart and narrative form the foundational tenets that make up WHMC.

Section three, entitled, "Tools" gives the user the ability to open a blank Data Worksheet Template, in a Microsoft Word application (Appendix J)for on-screen editing. The final section of this page, "Begin the Journey" hosts a Navigation link (Appendix F) which describes the views of the BSC as well as the link entitled Organizational Chart/View 1, described below.

Organizational Chart/View 1

The organization chart (a.k.a. View 1) is the starting point for the Intranet-based scorecard. It is from this page (Appendix G) that an individual can drill down to organizational scorecard specifics. To proceed from this page an individual clicks on an organizational link. This page includes all levels of the organization from the medical wing (corporate) through the medical groups (division) to the medical squadrons (strategic business units).

Corporate Scorecard/View 2

This view (Appendix H) will show the heart of the scorecard for an organization. This product shows the wing's scorecard, with its METs and measurements allocated within the four perspectives of the scorecard. Additionally the measurements are either classified as quantitative or qualitative. Further subdivision of the quantitative class will break down measurements into two components. One component is performance drivers, prospective measurements (a.k.a. lead indicators) that serve as early indicators of future success. The other component is outcome measures, retrospective measurements (a.k.a. lag indicators) that serve to show results of actions previously accomplished. The measurements are numbered consecutively using the first two digits of the MET it aligns with (example: the measurement 2.4.1 Spendline, falls under MET 2.4 Financial Responsibility). Additional numbers are assigned for reference within a perspective (example: Internal Business Process has nine METs, listed as I1-I9).

From this View 2, five links are possible. The first four links are to Exploded Perspectives/View 3 (described later) from the perspective titles of Financial, Customer, Internal Business Process and Learning and Growth. The fifth link, available at the top of the screen, is to the Color Coded Scorecard/View 6 (described later).

Exploded Perspectives/View 3

An exploded perspective exists for each of the four BSC perspectives listed from View 2. These views (Appendix I) list

the exploded view of the perspective, to include the MET linkage, the measurement, the standard and the target. Details on the construction of the measurement can be seen accessing the data worksheet via the "worksheet" link. Clicking on "chart" will link to a view of data points collected over time, imposed on a color-coded background.

For an example of the worksheet and chart links, see View 3 for the Learning and Growth perspective, measurement 2.3.14. Still in work as of the date of submittal of this project was the loading of data into all the data worksheets and charts.

Data Worksheet/View 4

This view (Appendix J) lists details on construction of the measurements. Details include linkage to organizational entities, functional office of primary responsibility, date last updated, linkage to goals and METs and measurement data. Other data such as chart color parameters, scorecard perspective, data source, frequency of data collection and Joint Commission of Accreditation of Healthcare Organizations linkage are also shown.

Chart/View 5

Charts allow a visual view of the measurement dynamically over a specified period of time. Charts such as the run chart viewed in the example are preferred as they show more than a snapshot of performance at a specific time. This allows leadership to monitor for trends. This chart is available at Appendix K. The chart profiled is for MET 2.3 Customer Satisfaction, measurement 2.3.14, Grievances/Discrimination Complaints. Below the chart is listed the Standard of less than

or equal to 15 complaints per quarter and the Target of less than or equal to 10 complaints per quarter. This run chart, though populated with simulated data, helps the reader to gain an understanding on its use.

Color Coded Scorecard/View 6

This view of the scorecard shows the organization's measurements, color-coded to show current status. Additionally it provides a comparison to the last reporting period (up, down or constant) and the number of months at the current status. The color code meanings will vary based upon whether the measurement is a quantitative or qualitative one. If it's a quantitative one, the meaning will depend upon the parameters defined by the organization. If the measurement is qualitative, then the color code is as follows:

1) Blue: Fully mission ready and effective, continued performance under control.
2) Green: Generally mission ready and effective, stable with reliable processes in place.
3) Yellow: Not fully mission ready or effective, corrections identified and underway.
4) Red: Not mission ready, corrective action unclear and or resources unavailable.

This slide will be used as the briefing tool for commanders on the "status" of an organization. Linkage exists from this page to Outcome Log (View 7). A proposal schedule of status briefings might be as follows. Each squadron commander will brief their respective group commander quarterly with group commander

briefings to the wing commander annually. A more aggressive posture would be monthly squadron commander briefings to the groups and quarterly group commander briefings to the wing commander. This slide is viewable at Appendix L.

Outcome Log/View 7

The Outcome Log is for recording entries concerning corrective actions taken against measurements on the Color Coded Scorecard. Red and yellow status (colors signifying deficiencies) on View 6 poses a requirement for corrective actions. This view, seen at Appendix M, is the method whereby an organization can record the decisions made (outcomes), against the colors, which reflect the deficiencies that exist. Opportunity exists to record entries classified within perspective and according to specific measurements, at the discretion of the specific organization. This slide is useful as a history-reporting tool to show external inspection agencies of corrective actions taken. While the majority of the BSC shows process, the Outcome Log records the decisions and outcomes made as a result of the process.

Conclusion and Recommendations

It is recommended that the enterprise continue to build upon the work that has been done to this point. Much work remains to be done at Wilford Hall Medical Center, the development of the wing scorecard was only a first step. The BSMS shows promise for the leadership of the organization to use to ensure maximum utilization of its finite resources.

While much was accomplished during this project, much work

still remains. Future areas of study and follow-up could include the following:

1) Continued development of group and squadron scorecards.
2) Completion of worksheets and charts data loading for wing scorecard.
3) Appointment of BSMS Managers for all organizational levels, with training in aspects of the BSMS.
4) Development and implementation of the automation system technical solution.
5) Recurring methodology of using the scorecard views as a briefing tool to keep leadership informed.
6) Ongoing maintenance and review of the BSMS components (vision, mission, goals, METs, measurements) for each wing, group and squadron scorecards.
7) Development of chart data (View 5) superimposed on a color-coded background of some variation of red-yellow-green-blue, to show compliance within set parameters (Some experimentation was accomplished with the Microsoft PowerPoint application, but the results were not satisfactory).

Developing and implementing a management system does not occur quickly. Such was the case with this BSMS. Untold hours of effort were spent doing research, holding discussions and interviews, conducting briefings, attending conferences, writing, formatting, and molding the system to get it to this point. The BSMS is a complex system with a wide scope of impact within this enterprise. However, the BSMS must continue to hold the

fascination of top leadership to remain viable. Competing priorities for the attention of the leadership will make it difficult to justify a system that is little understood or used.

Without leadership's direct involvement, the BSMS faces the risk of becoming an impotent, under-utilized database of measurements with little connectivity to the decisionmaking processes of the enterprise. Without leadership's direct involvement, the untold hours spent will convert this endeavor down to simply an academic exercise.

If the leadership of Wilford Hall Medical Center makes a commitment to the system and to its refinement and continual improvement, the BSMS is a tool with the power to allow WHMC to remain the Premier Air Force Medical Enterprise far into the 21st century. Time will tell the tale of whether the leadership of the 59th Medical Wing was up to the challenge.